CAMOS

BIOLOCK

BIOMETRIC **FINGERPRINT RECOGNITION**

EASY HOME / EASY MOBILE

User Manual

You have purchased a high quality hi-tech product.
Please handle with care and caution.

Warning

Never open the units. You may risk an electrical shock or to damage sensitive parts.

In case of any defect, please power off the system and consult your local dealer or the manufacturer.

This system is designed for use with 9 - 27 V low power supplies only.

While installation and usage don't handle with violence. In most cases malfunctions have a reason.

Please install the system according to usual precautions. Be aware of unprotected electrical power wires.

Please clean the system with soft cloth. Don't use oily, acid or soapy liquids.

Please use the sensor with your fingers only. Sharp objects or extreme force may damage it.

In case the sensor is very wet, please use a dry soft cloth to clean it. Water cannot decrease the sensor, but it can decrease the reading capability.

Safety advise

Even if the system locks or unlocks your house or car, you will be held responsible for proper locking.

Leaving your house or car, please make sure that it is properly locked.

Before selecting and installing an electromechanical locking system, please check your insurance police, if and which means are covered.

Please be aware that children's fingerprints may vary during their adolescence. Normally you should re-enrol every six months.

Just to be on the safe side, it is recommended to enrol at least two fingers per person.

Thank you for purchasing an Easy Home / Easy Mobile System.

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About biometrics.

„Biometrics“ refers to all kind of methods for uniquely recognition of humans based on one or more specific physical or behavioural characteristics. The more unique those characteristics are, the more they are applicable for definite identification.
The oldest of all biometric methods is the finger print identification, the so-called dactyloscopy (greek. *dactylos* „finger” and *scopein* „view”).
1896 in Argentina the dactyloscopy was introduced country wide for criminal investigations. Nowadays these methods become more and more accepted as access control method.

A biometric system uses three components, the sensor, the trait extraction (enrolment) and the comparison.
The sensor sends as result a fingerprint template. This template is an extract that is adjusted for optimal results. After the enrolment the template is digitally encrypted and stored. It is not possible to re-construct a complete image from the template.
While using the biometric system, the stored template will be compared to the current one. If the matching rate is within certain tolerances, the template will be accepted as valid.

The most significant quality and reliability traits of a biometric system are its failure rates: The False Acceptance Rate (FAR) and the False Rejection Rate (FRR).
More critical for consumer applications is the FAR value. It is more dangerous when an unauthorized person gets access than the rejection of authorized persons.

Besides a quick algorithm the sensor is the most important part for the reliabilty, speed and security of the biometric system.
The Easy Home / Easy Mobile is equipped with a high performance sensor using the latest available technology. It is a so-called active capacitive hybrid sensor. This sensor doesn’t take a “picture” of the finger surface, it measures the conductivity of the saline layer below the dry epidermis. Since the young skin is “build” there, the skin ridge pattern is exact the same than on the surface. Therefore this sensor type is more applicable for children with soft and people with dry and horny skin, can also handle small injuries like scratches or cuts.
Furthermore the sensor can recognize replica fingers

In comparison to swipe sensors, at which the finger must be drawn with the same speed and accuracy at any time over the sensor, the handling of a flatbed sensor is as easy as pushing a simple button.

Because of all the above mentioned reasons, the Easy Home / Easy Mobile system is suitable for all day usage for families and small offices and contributes a high level convenience.

How to use the CAMOS systems.

Easy Home

Easy Home was developed for the use in the automotive industry. The approval regulations are much stronger than for domestic applications, particularly with regard to more intensive environmental impacts, such as sunlight, moisture or temperature fluctuations.
Since our products meet those requirements, they are most suitable for domestic usage.

To use the Easy Home you need to install an electromechanical door locking system. The most popular method is an electric strike, the most elaborate seems to be an integrated motorized door lock. Both methods differ not only in security level, but also in cost and installation effort.
Every average DIY might install an electric strike. If necessary, consult an expert.

Various kinds of locking systems can be connected to the Easy Home. In case that large electrical loads must be switched, heavy duty relays can be integrated in-between. For example sliding doors, garage doors, shutters etc.

Another application field is the controlling of alarm systems with the Easy Home.

Easy Mobile

As explained above, the Easy Mobile meets the requirements of mobile applications. The system is well protected against environmental influences and it is designed to consume only a minimum of battery ressources in stand-by mode.

But, of course, the system is only applicable if an electro-mechanical door locking system is installed, too. In best case your car is already equipped with a central door locking system. Otherwise, please contact your local dealer to check the possibilities for backfitting.

There are at least two ways to connect the Easy Mobile:

By wire
Both relay contacts can handle loads up to 130 mA to switch circuits directly. In all other cases you may need to interpose heavy duty relays. In both cases you should try to find the connecting points to your central locking.

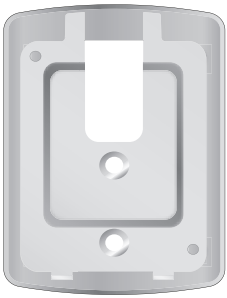
By remote control
If you own a remote controlled locking, the easiest way is to get a free remote sender. With a little experience you can connect the relay outputs of the Easy Mobile to the push buttons of the sender module.

Both solutions require good knowledge about your car's locking system. If necessary, please consult your dealer or a specialist.

The components.

Fingerprint reader

Mounting bracket



Reader

1

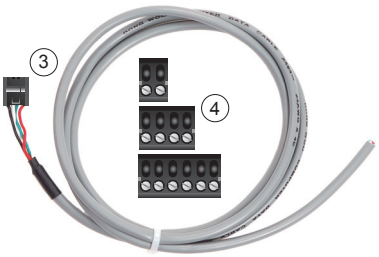
Controller

Main unit

Mounting bracket

2

Installation material



3

4

5

6

1. Outdoor reader with mounting bracket and rubber fitting
2. Controller with mounting bracket and furniture protector
3. Data cable reader-controller, 1 m
4. Pluggable screw terminals with 2,4 and 6 pins
5. Two-core installation wire, 5 m
6. Screws and small parts
7. Not shown: manual, installation scheme

How to use the key pad and how read the step by step guide.

All component settings are prepared to work out of the box after installation. The major tasks after the installation are to set the master password and to enrol the fingerprints of the authorized persons.

For more individual settings the control unit is equipped with a display and a key pad. On the following pages all expert functions will be explained step by step.

Please make yourself familiar with the signs and symbols on the right side.

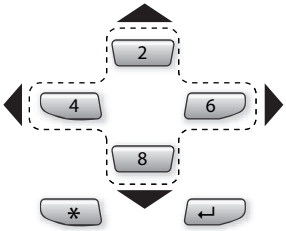
Signs and symbols

Illustration	Explanation
* , 0	The keys shown must be pressed successively.
0 ~ 9	For entering numbers the digits from 0 to 9 are valid. Value range up to 99.
abc ~ xyz	For input, numbers and letters are acceptable. Please use the key pad similar to the T9 key oad of mobile phones.
1 / 2	Valid values are 1 or 2 only.
0 ~ 9	Input is not necessary and might be skipped.
*	Cancel the current job, leave the system menu, delete a character (text input).

The menu structure and navigation.

Handling

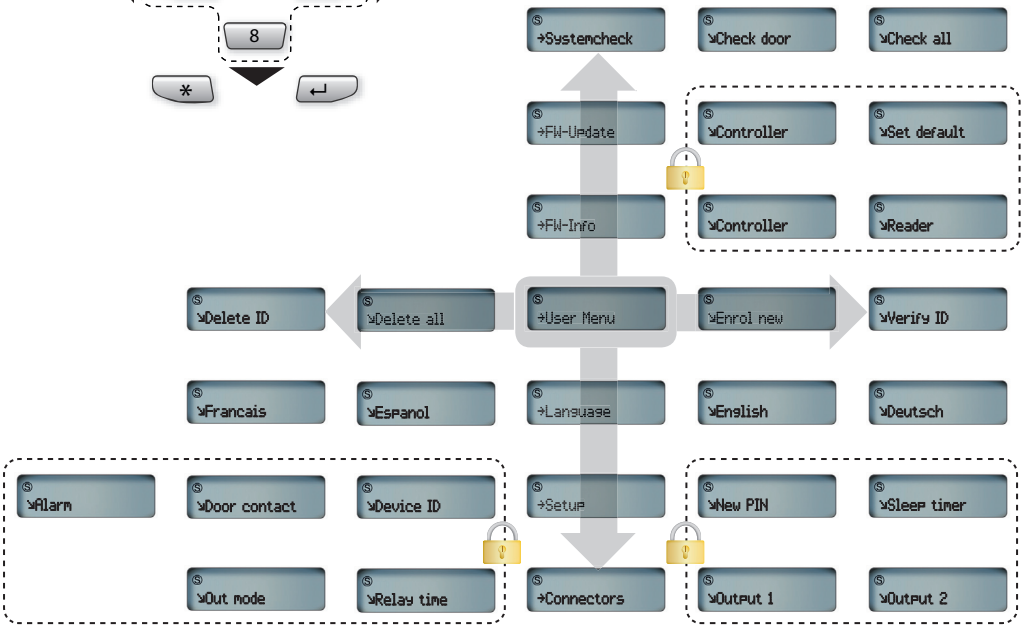
To set up the system you need to navigate through the below menu structure. For this purpose you will use the keys 2, 8, 4 and 6. For a better understanding, please imagine a virtual 2D-button:



The basic functions are available after single login into the system menu.

Some expert settings require exact knowledge about the functionality of the BIOLOCK components. Access to these functions will be granted by re-entering the PIN number.

Please read this manual carefully before changing any settings!



Menu functions which are password protected separately, are marked with 🔒.

Login and access to system stettings and functions.

The access to the main menu is protected by a personal identification number (PIN).

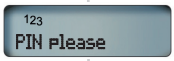
The factory default PIN is „1234”. It is recommended to change the PIN immediately after first login.

On the following pages all functions will be explained. To achieve a higher legibility, the login procedure will be shown in a short form:

After an adjustable time the system will automatically log off. This minimizes the risk of an unauthorized access to essential functions. The factory value is 10 seconds.

It is recommended to log-off manually after finishing your current job as described on the right side.

Step by step guide

Display	Input
	
	You are logged in.

Step by step guide

Display	Input
	You are logged off.

How to change the PIN.

The default PIN is „1234”. It is highly recommended to change the PIN to a personal value.

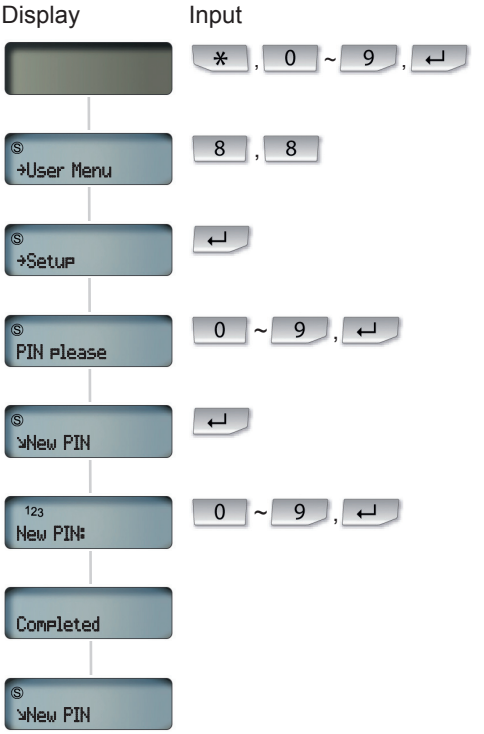
The PIN might consist of 4 up to 12 digits. The longer the PIN is, the more secure it is. Optimal protection is achieved with a minimum of 5 digits. Usually PINs should not show any relation to your personality, such as birthday, age, etc.

The main unit of the BIOLOCK system will be installed inside. The risk of spying out your PIN by a third party might be considered as relatively low.

However, if you feel that you have been observed while entering your PIN, please change immediately.

For professional applications periodical changing of the PIN is recommended.

Step by step guide



How to select another language.

The default language for the display and the menu is English. With less effort you can select your favourite language.

Please follow the instructions on the right, rebooting the system is not necessary.

Step by step guide

Register new fingerprints.

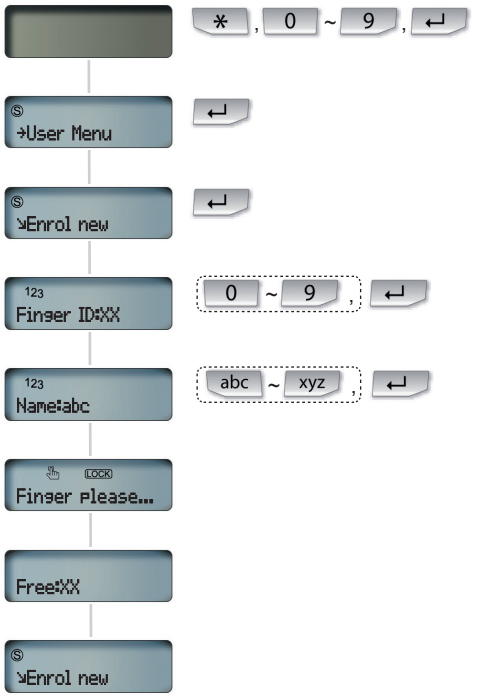
Fingerprints will be stored as so-called “Templates” in the memory of the control unit. It is not possible to re-construct complete fingerprint images from the templates, but to compare two templates with each other.

The memory is organized like a relational database, i.e. every fingerprint will be assigned to a unique storage index (ID) number. Every new fingerprint will be allocated to the next available ID. The ID can also be assigned manually during the enrolment.

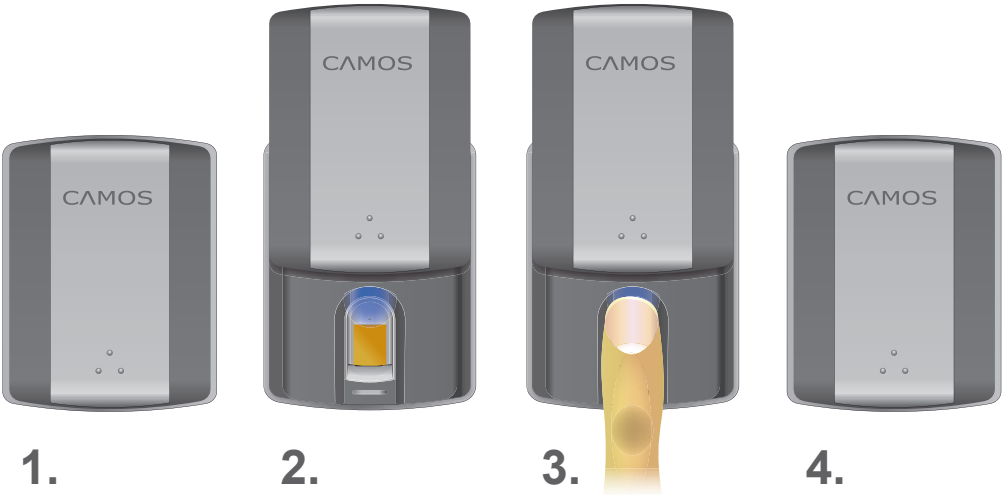
It is recommended to keep a separate list of the assigned ID numbers and reference it to user names. This will enable you to delete or overwrite individual templates very easily.

If you want to overwrite a used memory ID, you must confirm the hint in the display by pressing ↵.

Step by step guide



How to use the fingerprint reader.

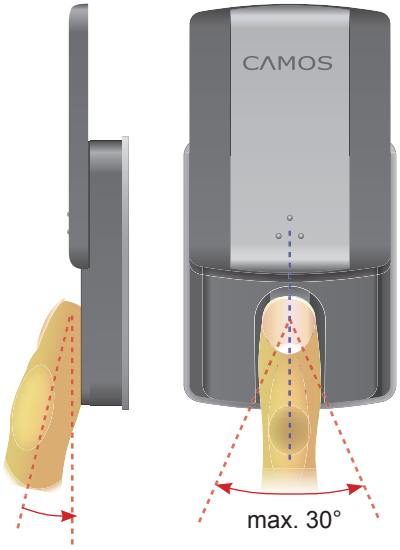


1. Open sensor cover.

2. Blue LED turns on.

3. Place finger smoothly and straight.

4. Close sensor cover.



As smoothly as possible

Hints

- For security reasons there is an integrated time-out after 3 seconds.
- For security reasons you will have only three attempts for fingerprint recognition. After that you have to close and open the cover again.
- If the sensor position is inconvenient for using your forefinger, we recommend to use your thumb.
- Please find your way to place the finger with the biggest possible contact area. Try to use the swilley for orientation.

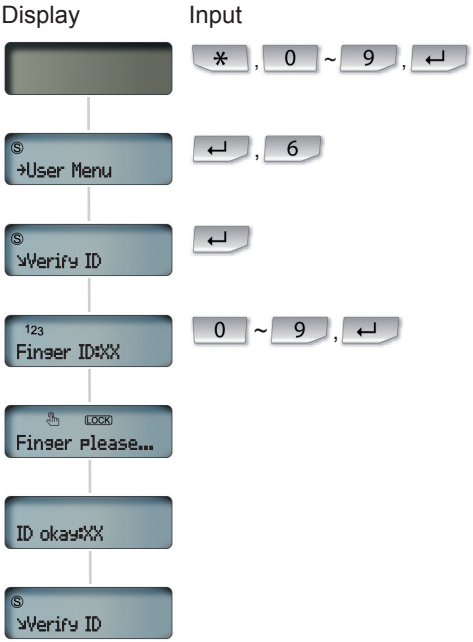
Verify existing fingerprint templates.

After enrolment you might want to verify the fingerprint. Please enter the ID and let the system check your finger again.

This function is helpful if the reader must be installed in a difficult position and in case you are not sure that placing the finger is convenient for you for a longer time.

It will enable you to test several times without activating the door opening mechanism.

Step by step guide



How to delete one fingerprint template.

A single fingerprint template can be deleted by its storage number, its ID.

Vice versa you cannot delete a fingerprint without its ID. If you want to use the system with a high volatile user group, it is recommended to keep a separate list with user to ID reference. Otherwise the database must be erased completely and the remaining persons must be registered again.

Alternatively, you might assign the storage IDs manually to differentiate user groups, i.e. 0-19 for family, 20-39 for guests, etc. This will enable you to distinguish between permanent persons and guests.

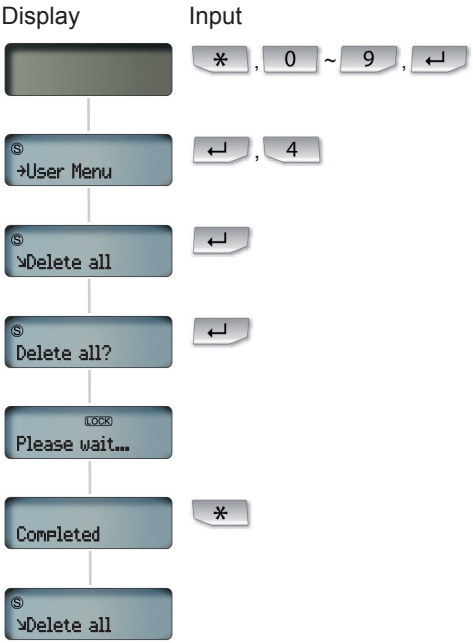
Step by step guide

How to delete all stored fingerprint templates.

You can delete all stored templates in one step.

Please use this functionality carefully, the remaining persons must be registered again!

Step by step guide



How to set the sleep timer.

You can log off the system menu whenever your current task is completed by pressing the * key.

In case that you cannot finish your job or if you get distracted, the system will log off after a certain period for security reasons.

This period for the sleep mode timer can be adjusted from 5 to 99 seconds.

Step by step guide

Display	Input
	* , 0 ~ 9 , ↵
S →User Menu	8 , 8
S →Setup	↵
123 PIN Please	0 ~ 9 , ↵
S ↘Sleep timer	6 , ↵
123 After (5-99s):XX	5 ~ 9 , ↵
S ↘Sleep timer	

How to use the alarm function.

The control unit provides a sensor input that operates as normally closed (NC) door switch. This means, the quiescent current will be interrupted in case of opening the door. For example you can connect a dry reed contact (NC). The system can react with various activities.

The alarm function is deactivated by default and can be activated as explained in the right side.

1 Enables the alarm function
2 Disables the alarm function

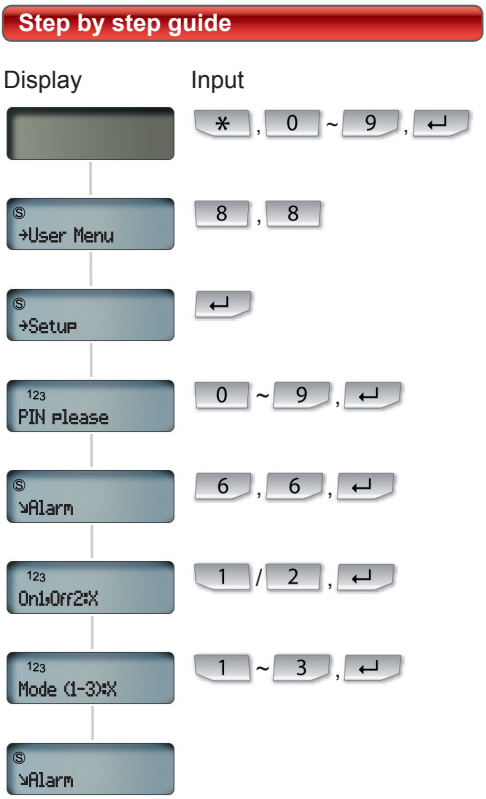
After activating the alarm function, you may select one of the three modes:

1 Upon alarm event, output 1 will be commutated.
2 Upon alarm event, output 2 will be commutated.
3 Upon alarm event, the controller will indicate optically and acoustically only, without changing the outputs.

The alarm can be disarmed by a valid PIN number or positive fingerprint matching only.

Best usage for optical alarm signal. When you return to your home or car, you can see from the distance that something happened.
Please consider local regulations for acoustic alarms. In most cases the maximum duration is limited to 1 minute.

Step by step guide



How to activate the door sensor.

The controller is equipped with a sensor input that is prepared for a NC (normally closed) door contact, i.e. a dry reed contact.

The system can detect that the door is open, and react accordingly.

Please check the installation guide for proper installation.

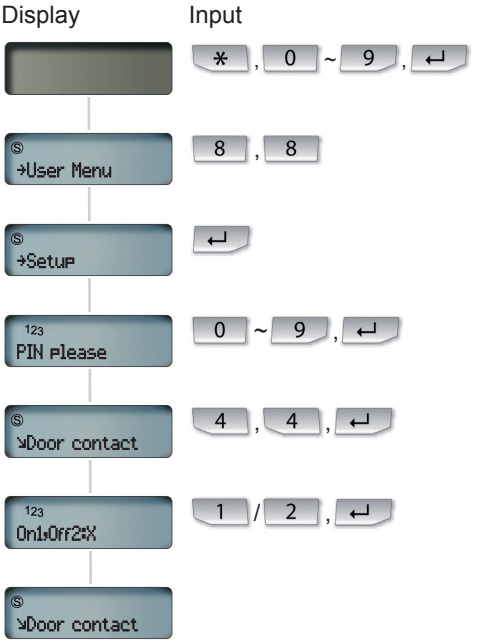
The door contact is disabled by default. You may enable as explained herein.

1 Enables the door contact
2 Disables the door contact

When enabled and the door is open, the outputs will remain active until the door will be closed again. The relay time will be ignored.

Example: If you use a magnetic door lock, the magnet is inactive until the door is closed. This will save power and extend lifetime of the coil inside the lock.

Step by step guide



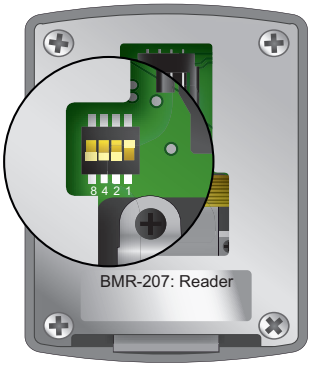
How to set the system ID.

Due to security reasons reader and controller must be paired. In case of exchanging the reader, the system will not work.

The units are paired by factory settings. Under normal conditions it is not necessary to change the ID. Anyhow, if you like to change the system ID, you may select a system ID from 1 to 15.

You need to change the ID via DIP switch on the back side of the reader and the settings in the system menu.

An overview of the valid DIP switch settings and its meaning you may find in the installation guide.



Step by step guide

Display	Input
	* , 0 ~ 9 , ↵
→User Menu	8 , 8
→Setup	↵
PIN please	0 ~ 9 , ↵
↘System ID	4 , ↵
Sensor ID:X	1 ~ 9 , ↵
↘Device ID	

How to operate output 1.

The controller offers two separately configurable outputs.

Each output can be operated either as switchable DC supplier or as potential-free relay contact. The mode selector (DIP switch) is located on the back side of the control unit.

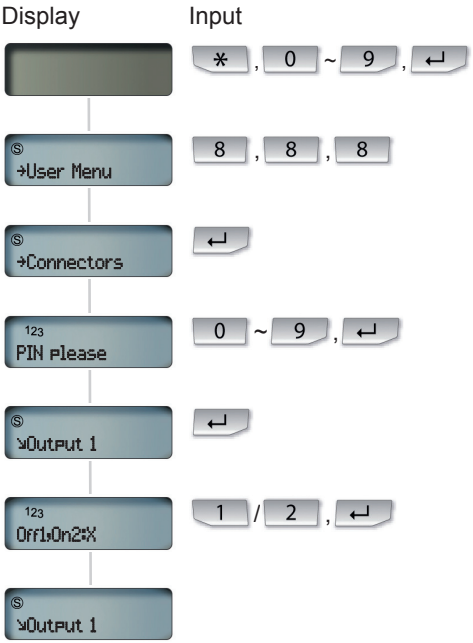
The meaning of the DIP switch setting is explained on the next page. You will find the specification of the outputs in chapter *Technical Data/Specification* on page 30.

If operated as DC supplier the ports can work as open current or closed current terminals.
If used as relay contacts, the ports can work either as NO or NC contact.

	DC mode (default)	Relay mode
1	No power out in normal status	Contact open in normal status
2	Power out in normal status	Contact closed in normal status

Factory default for output 1 is DC mode and open current, i.e. power off in normal status. An electric strike can be connected to this port without changing any settings.

Step by step guide

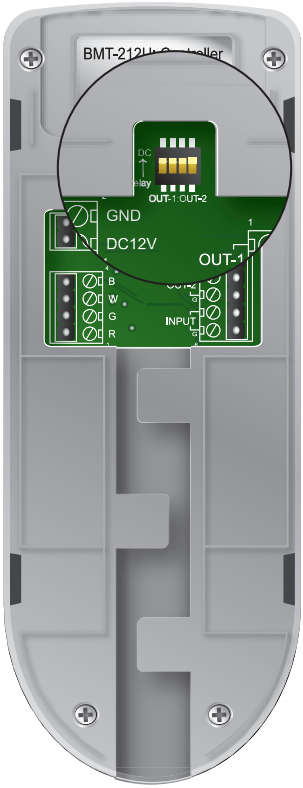


How to operate output 2.

Output 2 works similar to output 1. You will find a detailed explanation on the previous page.

The factory setting for output 2 is DC mode and operating current in normal mode. Without any modification, you can connect a door magnet to the output 2.

You can configure the port as explained on the right.



Step by step guide

Display	Input
	* , 0 ~ 9 , ↵
→User Menu	8 , 8 , 8
→Connectors	↵
PIN please	0 ~ 9 , ↵
→Output 2	6 , ↵
Off1:On2:X	1 / 2 , ↵
→Output 2	

Out1 & Out2: DC mode

Out1:DC mode & Out2: Relay mode

Out1:Relay mode & Out2: DC mode

Out1 & Out2: Relay mode

How to connect external devices to the outputs.

The control box offers two outputs to be connected with door openers, optical or acoustical signal indicators. Also they can be connected to sensor inputs of alarm systems.

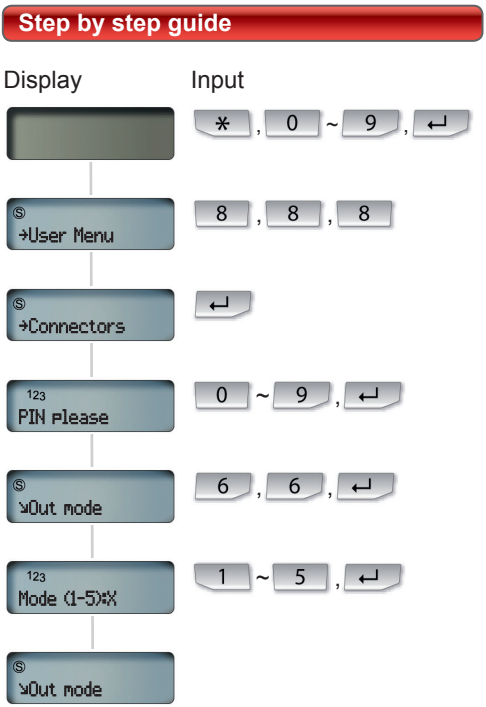
Both outputs can be operated synchronously or independently from each other. The system can distinguish between short (< 3 sec.) and long (≥ 3 sec.) finger contact. For your support, the reader will signal by pulse sound.

Available modes:

1 Only output 1 is used
Output 2 is free for alarm function
2 Only output 2 is used
Output 1 is free for alarm function
3 Both outputs will work synchronously
4 On short finger contact (< 3 sec.), output 1 will be operated, on long finger contact (≥ 3 sec.), output 2 is switched.
5 On short finger contact (< 3 sec.), output 2 will be operated, on long finger contact (≥ 3 sec.), output 1 is switched.

Factory mode is 1.

Step by step guide



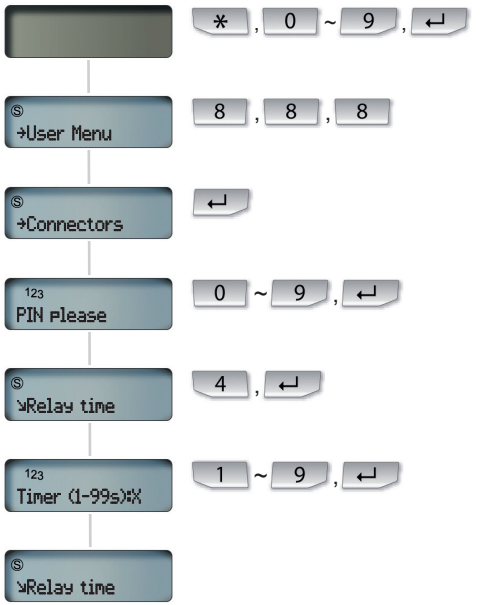
Setting the relay time.

In case of positive fingerprint recognition, the outputs will be operated as per settings. (please see previous pages)

The duration of the output activity is triggered by the relay time value. The period may be set from 1 to 99 seconds.

Please read the manual of the external device to find out optimal settings.

Step by step guide



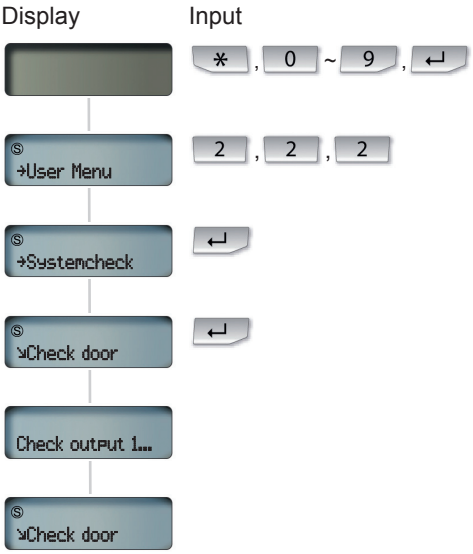
Quick test for output 1.

The system is configured to work with a standard electric strike by factory default.

Usually the strike will be connected to output 1, since this port can be operated by touch sensor on the controller. (compare installation guide)

To check the port settings and the wiring after installation, you may use the quick test function.

Step by step guide



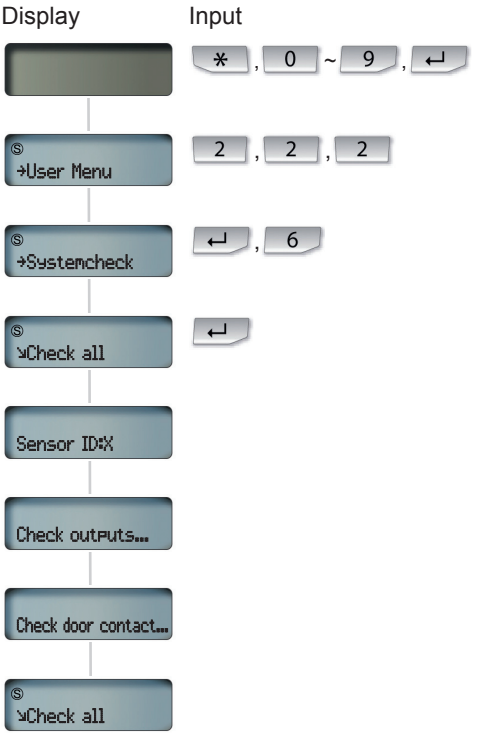
Complete system connector test.

This function will start a complete connector test and will check the fingerprint reader.

If the system ID is displayed correctly, the reader is well connected. Otherwise please check the link.
Afterwards the outputs 1 and 2 will be switched 3 times.

At least the input will be checked. To complete the test, please operate the door contact at least one time. If you didn‘t connect a door contact to the system, please ignore the error message.

Step by step guide



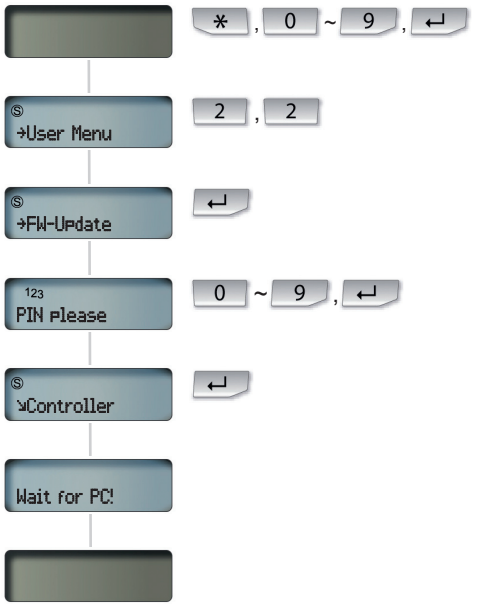
Updating the controller firmware.

The update functionality is meant for specialist usage only and to update new language files.

A consecutive update is not necessary and updates will be provided only in case of complex matters.
The access via PC/USB to the biometric system requires a special software. Otherwise it is not possible to get access.

Don‘t use this function without explicit instructions!
Once the system is set into update mode, it will not react on key pad nor fingerprint activity. In this case it must be returned to an authorized service team or to the manufacturer.

Step by step guide



How to return to default values.

If some of your settings do not have the expected effect or if you lost the overview, you may re-set the system to default values.

Stored fingerprint templates will not be deleted.

If you sell the system or will not use it any longer, please do not forget to delete all fingerprints for security reasons.

Step by step guide

Display	Input
	* , 0 ~ 9 , ↵
S →User Menu	2 , 2
S →FW-Update	↵
123 PIN please	0 ~ 9 , ↵
S ↘Set default	6 , ↵
Completed	
Power off and on!	
S ↘Set defaults	

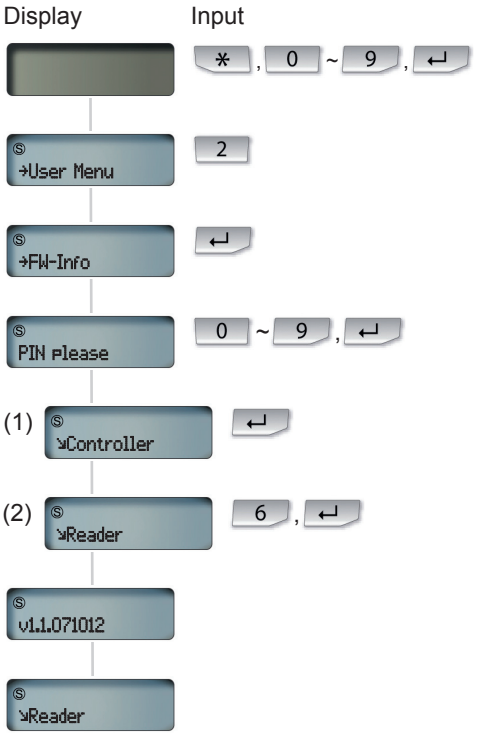
How to retrieve controller (1) and reader (2) firmware version.

In case of trouble shooting, please check all connectors and wiring first.

If it is still necessary to achieve technical help of our service team, check and write down the software versions before calling. This might help to fix the troubles quickly.

The version numbers of controller and reader do not match. This is no mistake.

Step by step guide



Specifications and connector limits.

Fingerprint reader BMR-207

Sensor technology	Active capacitive hybrid
Sensor type	Flatbed sensor
False Rejection Rate (FRR)	≤ 0.01 %
False Acceptance Rate (FAR)	≤ 0.001 %
Reader speed	0.5 s
ESD protection	30 kV
Wear protection (cycles)	> 1.000.000
Dust and moisture protection	IP 54
Internal communication	RS-485 (reader-controller), max. 300 m
Dimensions Width x Height x Depth	63 x 91 x 25 mm
Weight	160 g
Operating temperature	-20 / +70° C
Power supply	5 V via controller BMT-212U

Controller with Display BMT-212U

Storage capacity	100 finger templates
Dust and moisture protection	IP 54
Internal communication	RS-485 (reader-controller), max. 300 m
Outputs in DC mode	2 x 9 - 27 V out, max. load 450 mA closed current/open current (1-99 s)
Outputs in relay mode	2 x NC (opener) or NO (closer) Max. load 350 V / 130 mA
Input	1 x NC door contact (opener)
Dimensions Width x Height x Depth	63 x 170 x 33 mm
Weight	300 g
Operating temperature	-20 / +70° C
Power supply	9 - 27 V, optimal 12 V
Power consumption	9 mA (Stand-by), max. 100 mA

How to solve malfunctions.

Strange signal sounds Strange display behaviour Errors in fingerprint recognition Malfunction in using the system menu Red controller LED is on.	Please check the power supply. Most of the malfunctions are caused by weak power or power overload. Optimal power supply is 12 V DC / 2 A. Please check the link between reader and controller, this is a combined data and power supply line.
Alarm sound and/or blue controller LED is active.	Please check the *Alarm* and *Door contact* settings. May the alarm function was activated without connecting a door contact.
Troubles with connected external systems and opening devices.	Please check the *Connectors* settings.
The reader is not working.	Please check the RS-485 cable link between both units. Please check that a unique system ID has been selected (DIP switch on reader back side and system settings *Device ID*).
Door opener is not reacting upon inner touch sensor.	Perhaps *Out mode* settings are not correct. Please read the related chapters. Please check the wiring, too.
The blue LED of the reader is not working and no sound appears while opening and closing the sensor cover.	The link between reader and controller seems to be broken. Please re-check.
While opening the reader cover, a strange sound melody occurs.	In case that no fingerprint has been stored yet, the reader signals with special sound.
The system doesn‘t react upon * key.	Maybe the power supply doesn’t meet the requirements or there is a problem with the wiring.

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